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USER MANUAL

Starter Kit EFM32GG-STK3700

The EFM32 Giant Gecko Starter Kit is a feature rich platform for evaluation, prototyping and application development for the EFM32 Giant Gecko MCU family with the ARM Cortex-M3 CPU core.

Main features:

- **Advanced Energy Monitoring provides real-time information about the energy consumption of an application or prototype design.**
- **On-board debugger with the possiblity to debug external targets.**
- **Several sensors, a 160-segment LCD Display, backup domain capacitor and an on-board NAND Flash.**

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1 Introduction

1.1 Description

The EFM32GG-STK3700 is an excellent starting point to get familiar with the EFM32 Giant Gecko microcontrollers. The kit contains sensors and peripherals demonstrating some of the MCU's many capabilities. The kit can also serve as a starting point for application development.

1.2 Features

- EFM32GG990F1024 MCU with 1 MB Flash and 128 KB RAM.
- Advanced Energy Monitoring system for precise current tracking.
- Integrated Segger J-Link USB debugger/emulator with debug out functionality.
- 160 segment Energy Micro LCD.
- 20 pin expansion header.
- Breakout pads for easy access to I/O pins.
- Power sources include USB and CR2032 battery.
- 2 user buttons, 2 user LEDs and a touch slider.
- Ambient Light Sensor and Inductive-capacitive metal sensor.
- EFM32 OPAMP footprint.
- 32 MB NAND Flash.
- USB Micro-AB (OTG) connector.
- 0.03F Super Capacitor for backup power domain.
- Crystals for LFXO and HFXO: 32.768kHz and 48.000MHz.

1.3 Getting Started

The first step to get started with your new EFM32GG-STK3700 is to go to

[http://www.energymicro.com/simplicity]

The Simplicity Studio software package contains all the tools, drivers, software examples and documentation needed to use the EFM32 Giant Gecko Starter Kit Some important tools for use with the EFM32GG-STK3700 are:

- *energyAware Commander*
- *energyAware Profiler*

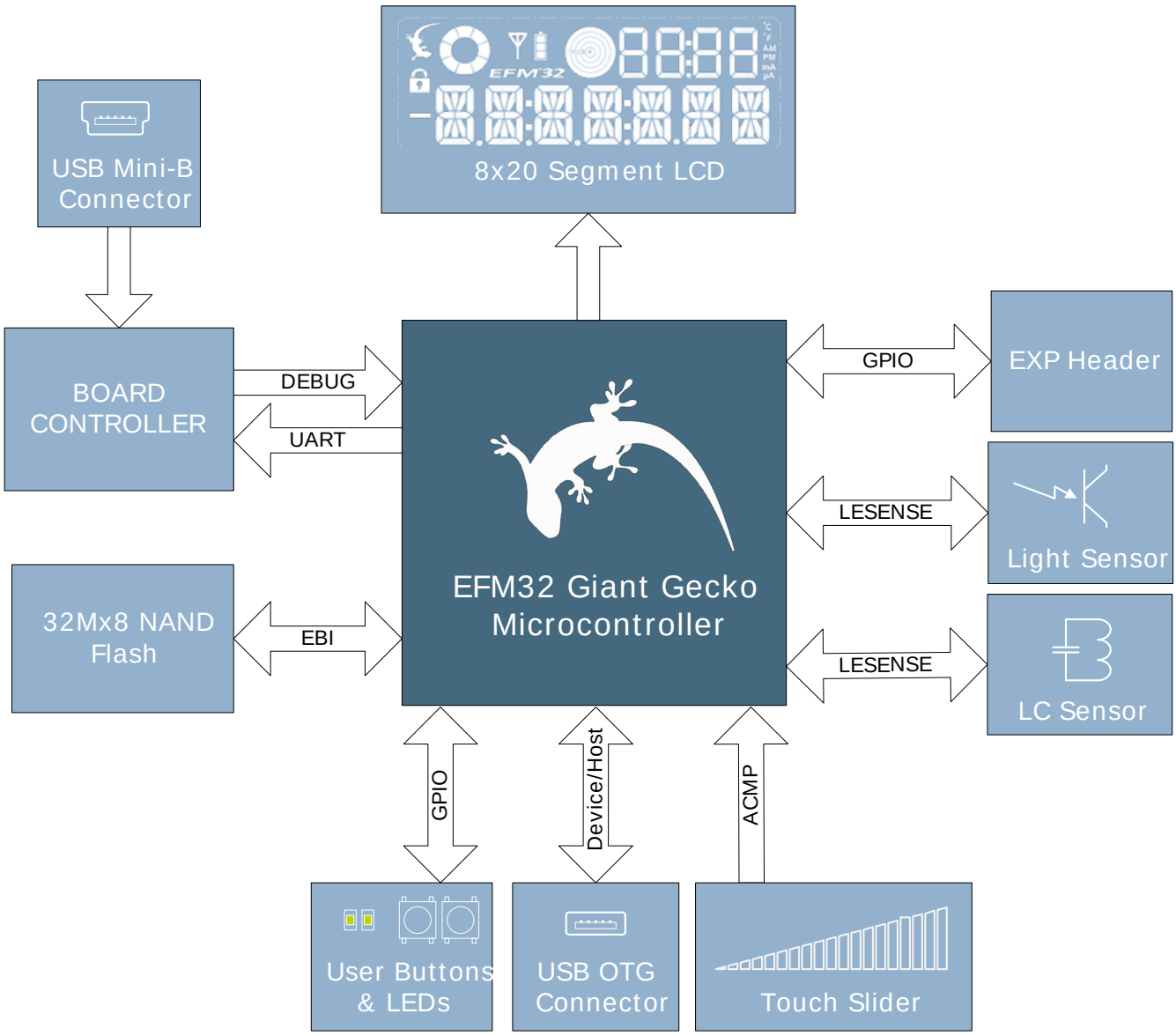
The *energyAware Commander* is a tool for updating the kit's firmware, programming the MCU and launching demos.

The *energyAware Profiler* is the PC-side interface to the Advanced Energy Monitor. It provides the possibility to do energy-debugging and profiling of application code.

2 Kit Block Diagram

An overview of the EFM32 Giant Gecko Starter Kit is shown in Figure 2.1 (p. 3)

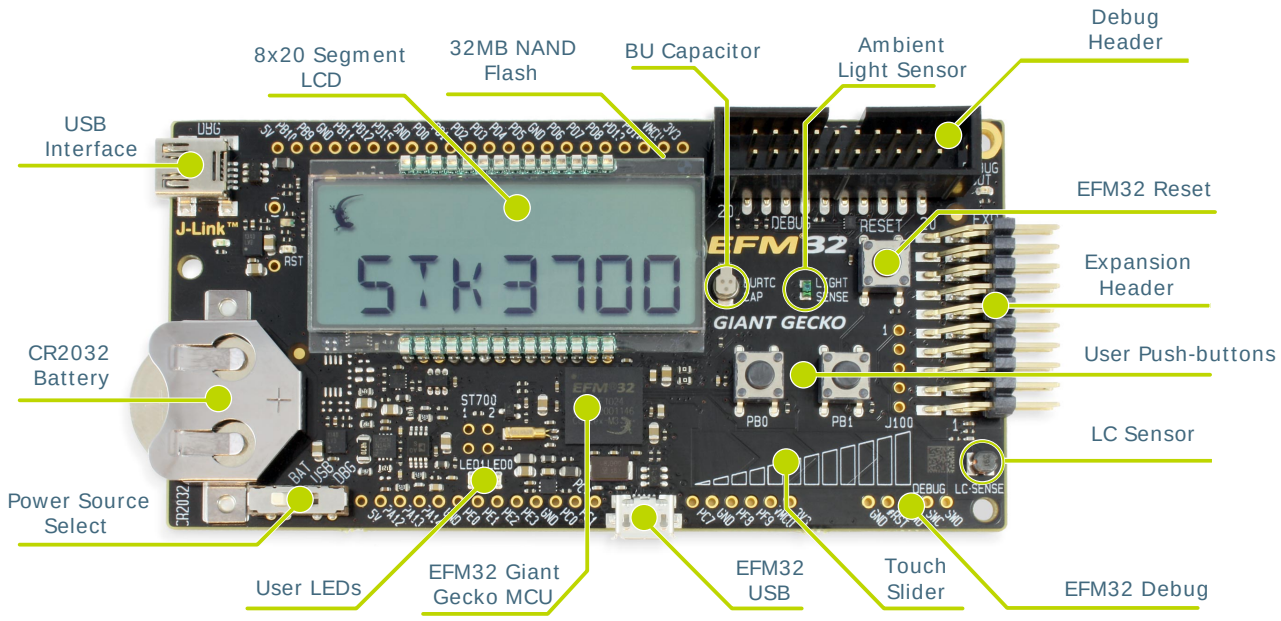
Figure 2.1. EFM32GG-STK3700 Block Diagram



3 Kit Hardware Layout

The layout of the EFM32 Giant Gecko Starter Kit is shown below.

Figure 3.1. EFM32GG-STK3700 hardware layout



4 Power Supply and Reset

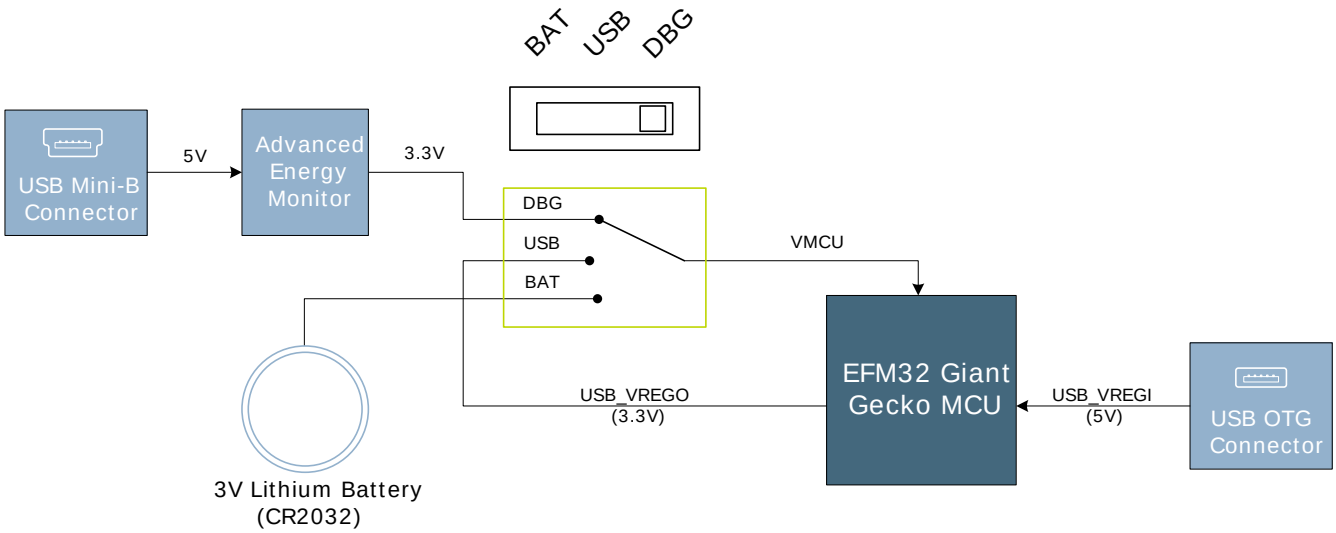
4.1 MCU Power Selection

The EFM32 Giant Gecko MCU on the EFM32GG-STK3700 is designed to be powered by three different sources:

- Through the on-board debugger.
- Through the EFM32's own USB regulator.
- By a 3V Battery.

Selecting the power source is done with the slide switch in the lower left corner of the board. Figure Figure 4.1 (p. 5) shows how the different power sources can be selected with the slide switch.

Figure 4.1. EFM32GG-STK3700 Power Switch



With the switch in the *DBG* position, an on-board low noise LDO with a fixed output voltage of 3.3V is used to power the MCU. This LDO is again powered from the "J-Link" USB cable. The Advanced Energy Monitor is now also connected in series, allowing accurate high speed current measurements and energy debugging/profiling.

With the switch in the *USB* position, the integrated linear regulator in the EFM32 Giant Gecko MCU is used to power the rest of the chip as well as the USB PHY. This allows a USB device application where the MCU acts as a bus powered device.

Finally, with the switch in the *BAT* position, a 20mm coin cell battery in the CR2032 socket can be used to power the device.

Note

The Advanced Energy Monitor can only measure the current consumption of the EFM32 when the power selection switch is in the *DBG* position.

4.2 Board Controller Power

The Board Controller is responsible for important features such as the debugger and the Advanced Energy Monitor, and is powered exclusively through the USB port in the top left corner of the board. This part of the kit resides on a separate power domain, so a different power source can be selected for the MCU while retaining debugging functionality. This power domain is also isolated to prevent current leakage from the MCU power domain when power to the Board Controller is removed.

4.3 Backup Power Domain

The kit contains a backup capacitor that can be used together with the EFM32 Giant Gecko's backup power domain. In this case, all other power sources are removed from the kit, and only a small part of the EFM32 runs off the capacitor. It is also possible to enter backup mode while the Board Controller is powered by selecting either *BAT* or *USB* with no battery in the socket or USB cable in the connector.

4.4 MCU Reset

The EFM32 MCU can be reset by a few different sources:

- The RESET button.
- The on-board debugger.
- An external debugger by pulling the *#RST* pin low.

4.5 Board Controller Reset

The Board Controller can be reset by removing and re-inserting the J-Link USB cable. Removing the Board Controller USB cable will not reset the EFM32, but whenever the Board Controller is powered up again, it will issue a RESET to the EFM32 through the on-board debugger.

5 Peripherals

The starter kit has a set of peripherals that showcase some of the features of the EFM32 Giant Gecko microcontroller.

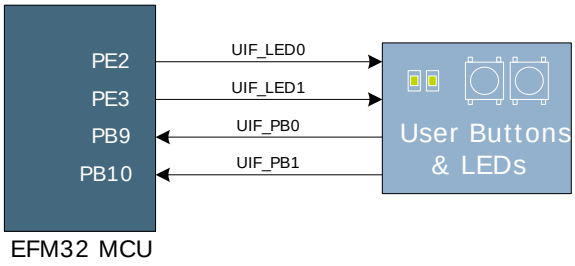
Be aware that most EFM32 I/O routed to peripherals are also routed to the breakout pads. This must be taken into consideration when using the breakout pads for your application.

5.1 Push Buttons and LEDs

The kit has two user push buttons marked PB0 and PB1. They are connected to the EFM32, and are debounced by RC filters with a time constant of 1ms. The buttons are connected to pins PB9 and PB10.

In addition to the two push buttons, the kit also features two yellow LEDs marked *LED0* and *LED1*, that are controlled by GPIO pins on the EFM32. The LEDs are connected to pins PE2 and PE3 in an active-high configuration.

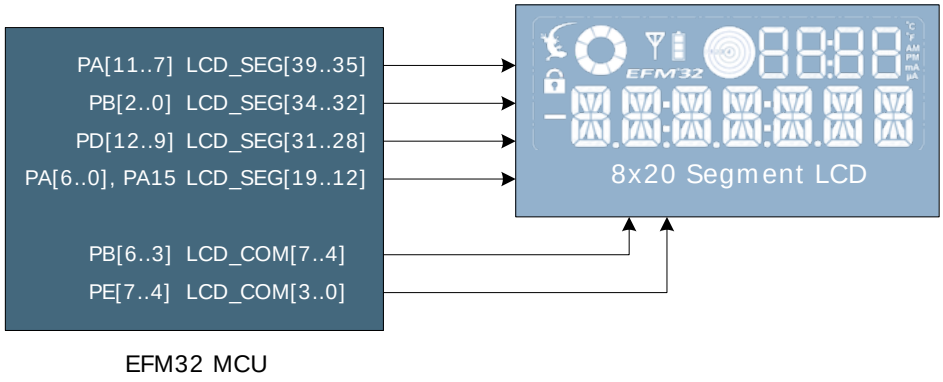
Figure 5.1. Buttons/LEDs



5.2 LCD

A 28-pin Energy Micro LCD display is connected to the EFM32. The LCD has 8 common lines and 20 segment lines, giving a total of 160 segments in 8-plexed mode. These lines are not shared on the breakout pads.

Figure 5.2. 160 Segment LCD

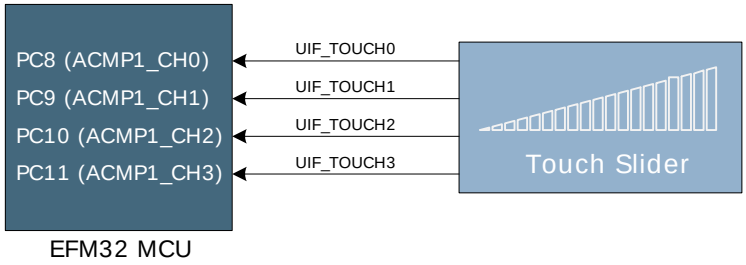


Capacitors for the EFM32 Giant Gecko LCD boost function are also available on the EFM32GG-STK3700.

5.3 Capacitive Touch Slider

A touch slider utilizing the capacitive touch capability is available. It is placed beneath the two push buttons on the kit. The slider interpolates 4 separate pads to find the exact position of a finger. For low power operation, the touch slider can be used together with LESENSE to continuously scan all 4 pads, using LESENSE channels 8 to 11.

Figure 5.3. Touch Slider

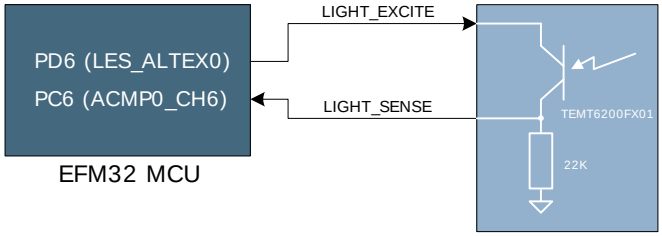


The capacitive touch slider works by sensing changes in the capacitance of the pads when touched by a human finger. Sensing the changes in capacitance is done by setting up the touch pad as part of an RC relaxation oscillator using the EFM32's analog comparator, and then counting the number of oscillations during a fixed period of time.

5.4 Ambient Light Sensor

The kit has a light sensitive, transistor type, ambient light sensor connected to the low energy sensor interface of the EFM32 Giant Gecko MCU. The sensor is placed above the push buttons and can be used to sense changes in ambient light levels.

Figure 5.4. Light Sensor

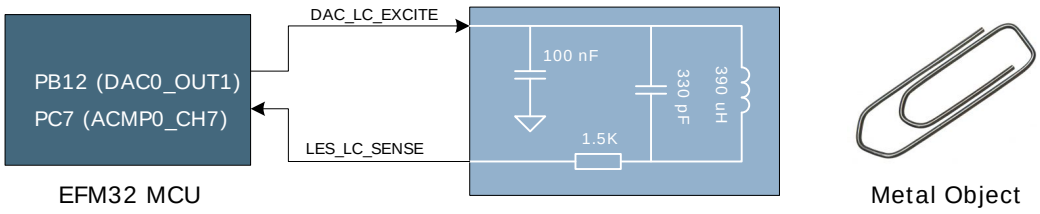


Two pins are used for the light sensor operation: one for excitation, and one for sensing. The sense pin is connected to ACMP0 CH6. Both the excitation pin and the sense pin can be controlled directly from the EFM32's LESENSE module.

5.5 LC Sensor

In the bottom right corner there is an inductive-capacitive sensor for demonstrating the low energy sensor interface. By setting up oscillating currents in the inductor, metal nearby the inductor can be sensed by measuring the oscillation decay time. The effective range is a few millimeters.

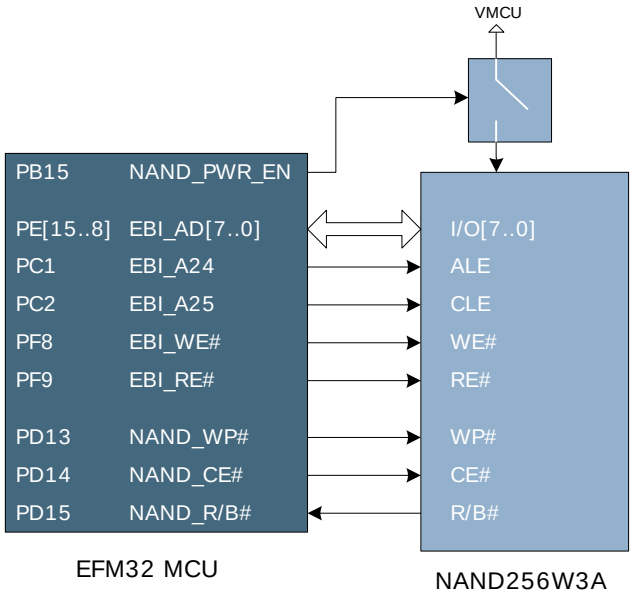
Figure 5.5. LC Metal Sensor



5.6 NAND Flash

A 32MB NAND Flash is connected to the external bus interface of the EFM32 Giant Gecko MCU. The interface is a simple 8-bit parallel interface. This peripheral demonstrates the EFM32 Giant Gecko's EBI module's NAND support with built in ECC generation.

Figure 5.6. NAND Flash Interface



A separate power switch is used to enable/disable the NAND flash, thus avoiding excess current draw when not used. When *NAND_PWR_EN* is high, the NAND flash is powered from the same supply as the EFM32 MCU. It is recommended to keep the write-protect line low during power transitions.

The ALE (address latch enable) and CLE (command latch enable) pins of the NAND Flash are connected to the EBI Address pins 24 and 25, and the CE (chip enable) line is connected to a general GPIO pin. This causes the NAND data, address and command registers to be mapped in the EFM32's address space as:

Data register:	0x80000000
Address register:	0x81000000
Command register:	0x82000000

5.7 Backup Domain Capacitor

A small super capacitor is provided to evaluate the EFM32 Giant Gecko MCU's backup power domain. The capacitor has a nominal value of 33 mF, and is connected with a 100 ohm series resistor to the BU_VIN pin of the EFM32.

Because of the extremely low power consumption of the EFM32 in backup mode (400nA), the capacitor can power a clock application using the low frequency crystal oscillator (LFXO) for more than 8 hours.

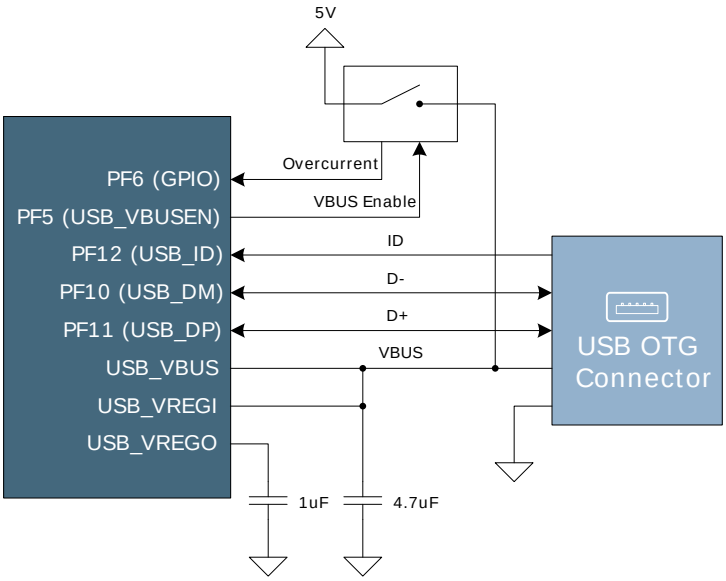
The series resistor allows measuring of the current drawn from the capacitor into the EFM32 device, by simply using a multimeter to measure the voltage across it. Please refer to the schematic and assembly drawings to locate the series resistor.

5.8 USB Micro-AB Connector

The EFM32GG-STK3700 board is equipped with a USB Micro-AB connector supporting USB Device and Embedded Host modes. The figure below shows how the USB lines are connected to the EFM32.

The USB_VBUSEN line is connected to a current limited switch which supplies the VBUS line with 5V when operating as a USB Host. The current limited switch also has a flag signal connected to the EFM32 which can notify it in case excessive current is drawn by the attached device. Note that the "J-Link" USB cable must be inserted to provide 5V to the device when operating the EFM32 in host mode.

Figure 5.7. EFM32 USB Connector



5.9 Op-Amp Footprint

If the kit is flipped over there is a silk-print model of a typical operational amplifier feedback circuit. The actual operational amplifier is one of the op-amps inside the EFM32. By soldering 0603 sized resistors the EFM32 internal operational amplifier can be evaluated with exact resistor values.

6 Advanced Energy Monitor

6.1 Usage

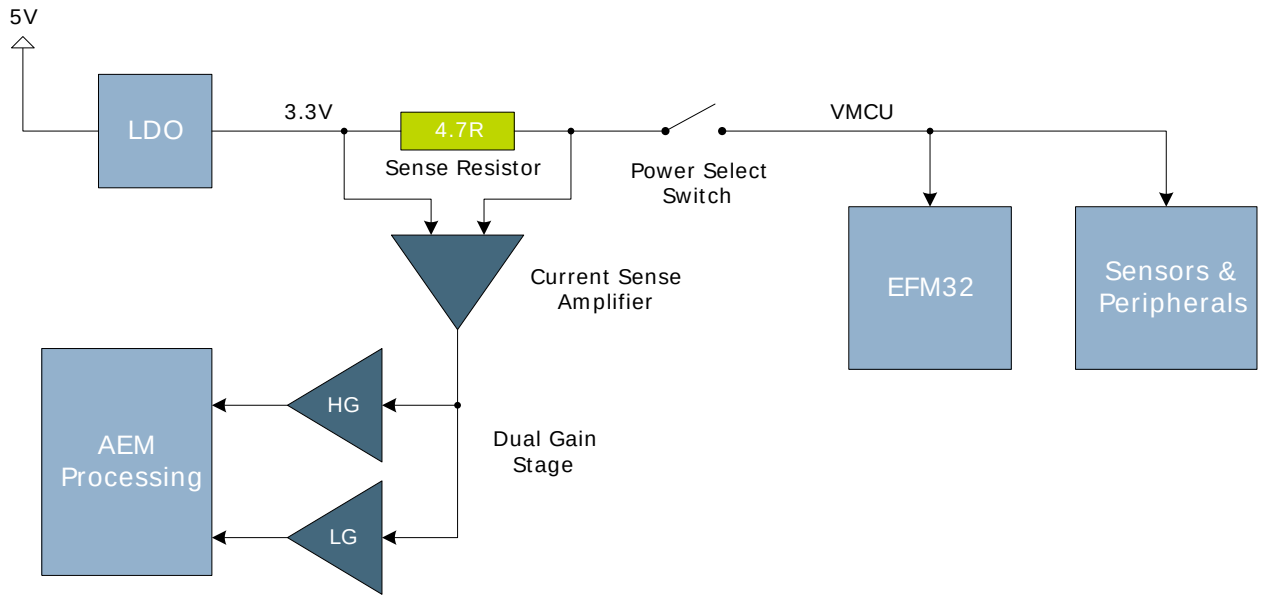
The AEM (Advanced Energy Monitor) data is collected by the board controller and can be displayed by the energyAware Profiler, available through Simplicity Studio. By using the energyAware Profiler, current consumption and voltage can be measured and linked to the actual code running on the EFM32 in realtime.

6.2 AEM theory of operation

In order to be able to accurately measure current ranging from 0.1uA to 50mA (114dB dynamic range), a current sense amplifier is utilized together with a dual gain stage. The current sense amplifier measures the voltage drop over a small series resistor, and the gain stage further amplifies this voltage with two different gain settings to obtain two current ranges. The transition between these two ranges occurs around 250uA. Digital filtering and averaging is done within the Board Controller before the samples are exported to the energyAware Profiler application.

During startup of the kit, an automatic calibration of the AEM is performed. This calibration compensates for the offset error in the sense amplifiers.

Figure 6.1. Advanced Energy Monitor



6.3 AEM accuracy and performance

The Advanced Energy Monitor is capable of measuring currents in the range of 0.1uA to 50mA. For currents above 250uA, the AEM is accurate within 0.1mA. When measuring currents below 250uA, the accuracy increases to 1uA. Even though the absolute accuracy is 1uA in the sub 250uA range, the AEM is able to detect changes in the current consumption as small as 100nA. The AEM produces 6250 current samples per second.

Note

The current measurement will only be correct when powering the EFM32 from USB power through the debugger (power select switch set to "DBG").

7 Board Controller

The kit contains a board controller that is responsible for performing various board level tasks, such as handling the debugger and the Advanced Energy Monitor. An interface is provided between the EFM32 and the board controller in the form of a UART connection. The connection is enabled by setting the EFM_BC_EN (PF7) line high, and using the lines EFM_BC_TX (PE0) and EFM_BC_RX (PE1) for communicating.

Specific library functions has been provided in the kit Board Support Package that supports various requests to be made to the board controller, such as quering AEM voltage or current. To use these functions, the Board Support Package must be installed. See the Chapter 8 (p. 13) to find out more.

Note

The board controller is only available when USB power is connected.

8 Board Support Package

The Board Support Package (BSP) is a set of C source and header files that enables easy access to, and control over some board specific features.

Compared to the Energy Micro development kit, the functionality is limited. Unless you need/want some of the functions contained in the BSP, there is really no need to include or use it. The EFM32 in the Starter Kit is fully usable without BSP support, and you can use all peripherals in the emlib without the BSP.

The BSP use EFM32 peripheral UART0, Location 1 (TX pin PE0, RX pin PE1) on baudrate 115200-8-N-1 to communicate with the board controller.

Note

The BSP is only functional when the Starter Kit is USB-powered, using these function calls with USB disconnected will give unpredictable results.

8.1 Installation location

When installing Simplicity Studio, the BSP will be installed in the user directory, typically in a location such as

```
Win7: C:\Users\[username]\AppData\Roaming\energymicro\kits\EFM32GG_STK3700\
```

or something similar (depending on your OS/Windows version). All files in the board support package are prefixed by stk.

8.2 Application Programming Interface

To use the BSP, include the Starter Kit header file, like this:

```
#include "stk.h"
```

All functions in the BSP are prefixed with STK_. The main initialization routine is defined as

```
void STK_Init(void);
```

and must be called before any access to the STK-functions. This function call will setup the UART communication channel with a 115800 baud rate. This baud rate depends on the current core clock, so correct clock configuration should be set before calling this function.

```
bool STK_Ready(void)
```

Returns *true* if the board controller is responding. A non-responding board will either return false, or hang (i.e. if the EFM32 is powered by the CR2032 battery cell).

```
float STK_Current(void);
```

Returns instant current usage in milliamperes.

```
float STK_Voltage(void);
```

Returns instant voltage (VMCU) reading in volt.

```
bool STK_EnergyMode(uint8_t em);
```

Informs the board controller about the Energy Mode (sleep mode) we are going into. This information can be used by the board controller to present a richer visual graph for illustrating what the EFM32 is currently doing.

In addition to these main functions, full documentation of the complete API is included in the Doxygen/HTML documentation of the installed package.

8.3 Example Applications

Under the kits/EFM32GG_STK3700/examples folder in your installation directory, you will find an example program using the BSP, with corresponding project/Makefiles for the supported IDEs.

The *examples* folder also contains examples showing how to use the different peripherals on the EFM32GG-STK3700.

8.4 How to include in your own applications

The easiest way to include the BSP in your application is to base your work on the example application that use the BSP. The following items are recommended for correct configuration:

1. Make sure you define the correct part number (i.e. EFM32GG990F1024) as a preprocessor defined symbol
2. Make sure you define the correct part number (i.e. EFM32GG990F1024) for your project file
3. Add and include the EFM32_CMSIS-files (startup_efm32.s, system_efm32.c, core_cm3.c) to your project
4. Add and include *all* BSP package .c-files, with the stk-prefix to your project
5. Configure include paths to point at the CMSIS/CM3/CoreSupport and CMSIS/CM3/DeviceSupport/EnergyMicro/EFM32 directories
6. Configure include paths to point to the kits/EFM32GG_STK3700/bsp directory

Make sure you call "STK_Init()" early at startup, and you should be all set.

9 Connectors

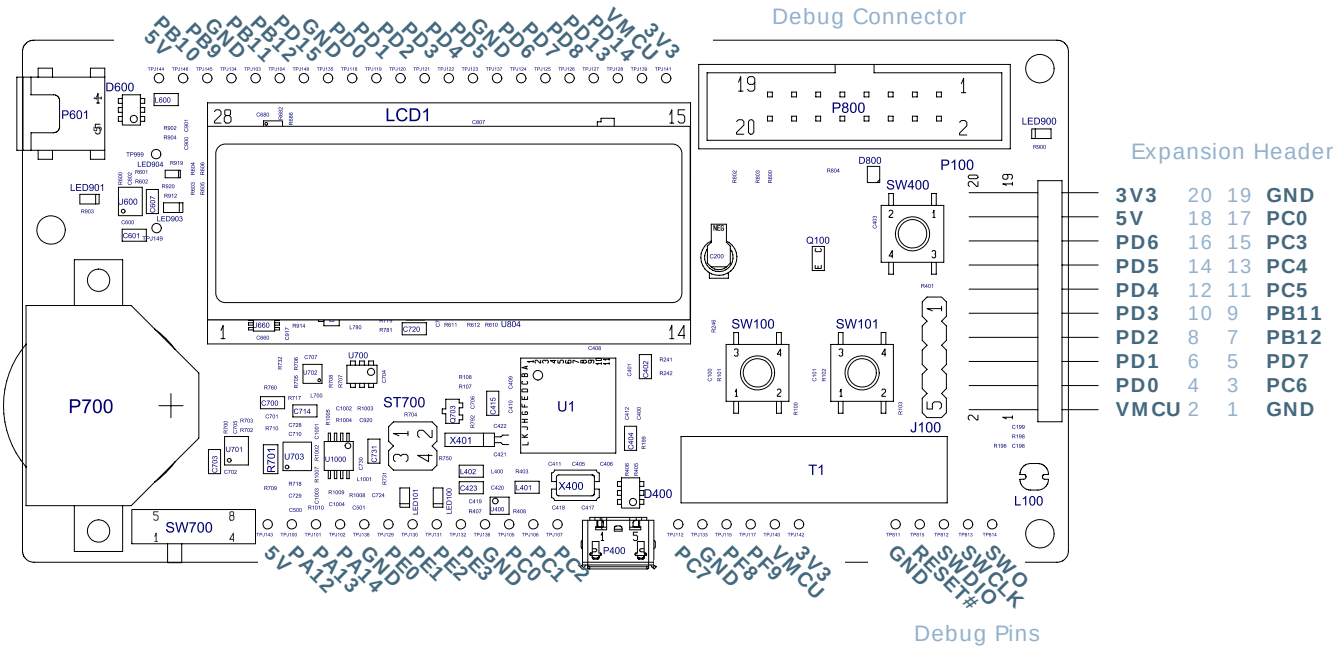
9.1 Breakout pads

Many of the EFM32's pins are routed out to "breakout pads" at the top and bottom edges of the kit. A 2.54mm pitch pin header can be soldered in for easy access to these pins. Most I/O pins are available, with the exception of pins used to drive the LCD and some pins used to drive the NAND flash.

Note

Some of the breakout pads are shared by on-board EFM peripherals. The schematic must be consulted to make sure that it is OK to use a shared pin in your application.

Figure 9.1. Breakout pads and Expansion Header



Note

Pins PC3, PC4, PC5 and PC6 are also available as surface mounted pads beneath the USB Micro-AB connector

9.2 Expansion header

On the right hand side of the board an angled 20 pin expansion header is provided to allow connection of peripherals or plugin boards. The connecter contains a number of I/O pins that can be used with most of the EFM32 Giant Gecko's features. Additionally, the VMCU, 3V3 and 5V power rails are also exported.

Figure Figure 9.1 (p. 15) shows the pin assignment of the expansion header. With the exception of a few pins, most of the Expansion Header's pins are the same as those on the EFM32 Gecko or EFM32 Tiny Gecko starter kits.

Some of the chip peripheral functions that are available on the Expansion Header are listed in table Table 9.1 (p. 16) .

Figure 9.2. Expansion Header

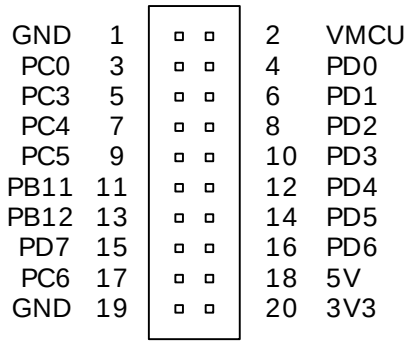


Table 9.1. Some peripheral functions available on Expansion Header

Peripheral	Peripheral pin	MCU Pin	EXP Header pin number
USART/SPI	USART1_TX	PD0	4
	USART1_RX	PD1	6
	USART1_CLK	PD2	8
	USART1_CS	PD3	10
I²C	I2C1_SDA	PC4	7
	I2C1_SCL	PC5	9
Low Energy UART	LEUART0_TX	PD4	12
	LEUART0_RX	PD5	14
Analog to Digital Converter	ADC0_CH0	PD0	4
	ADC0_CH1	PD1	6
	ADC0_CH2	PD2	8
	ADC0_CH3	PD3	10
	ADC0_CH4	PD4	12
	ADC0_CH5	PD5	14
	ADC0_CH6	PD6	16
	ADC0_CH7	PD7	15
Digital to Analog Converter	DAC0_CH0	PB11	11
	DAC0_CH1	PB12	13
Analog Comparator	ACMP0_CH0	PC0	3
	ACMP0_CH3	PC3	5
	ACMP0_CH4	PC4	7
	ACMP0_CH5	PC5	9
	ACMP0_CH6	PC6	17
	ACMP0_O	PD6	16
	ACMP1_O	PD7	15
Operational Amplifier	OPAMP_N0	PC5	9

Peripheral	Peripheral pin	MCU Pin	EXP Header pin number
	OPAMP_P0	PC4	7
	OPAMP_OUT0	PB11	11
	OPAMP_N1	PD7	15
	OPAMP_P1	PD6	16
	OPAMP_OUT1	PB12	13
	OPAMP_N2	PD3	10
	OPAMP_P2	PD4	12
	OPAMP_OUT2	PD5, PD0	14, 4
Timer Compare/Capture	TIMER0_CC0	PD1	6
	TIMER0_CC1	PD2	8
	TIMER0_CC2	PD3	10
	TIMER1_CC0	PD6	16
	TIMER1_CC1	PD7	15
	TIMER1_CC2	PB11	11
Low Energy Timer	LETIM0_OUT0	PD6, PB11, PC4	16, 11, 7
	LETIM0_OUT1	PD7, PB12, PC5	15, 13, 9
Low Energy Sensor Interface (LESENSE)	LES_CH0	PC0	3
	LES_CH3	PC3	5
	LES_CH4	PC4	7
	LES_CH5	PC5	9
	LES_CH6	PC6	17
	LES_ALTEX0	PD6	16
	LES_ALTEX1	PD7	15
Pulse Counter	PCNT0_S0IN	PD6	16
	PCNT0_S1IN	PD7	15
	PCNT1_S0IN	PC4	7
	PCNT1_S1IN	PC5	9
	PCNT2_S0IN	PD0	4
	PCNT2_S1IN	PD1	6
Peripheral Reflex System (PRS)	PRS_CH2	PC0	3

Note

Please note that this table only sums up some of the alternate functions available on the expansion header. Consult the EFM32GG990F1024 datasheet for a complete list of alternate functions.

9.3 Debug connector

This connector is used for Debug In and Debug Out (see chapter on Debugging). The pinout is described in Table 9.2 (p. 18) .

Figure 9.3. Debug Connector

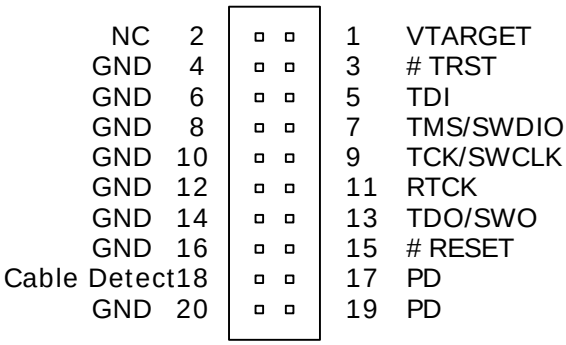


Table 9.2. Debug connector pinout

Pin number	Function	Note
1	VTARGET	Target voltage on the debugged application.
2	NC	Not Connected
3	#TRST	JTAG tap reset
5	TDI	JTAG data in
7	TMS/SWDIO	JTAG TMS or Serial Wire data I/O
9	TCK/SWCLK	JTAG TCK or Serial Wire clock
11	RTCK	JTAG RTCK
13	TDO/SWO	JTAG TDO or Serial Wire Output
15	#RESET	Target MCU reset
17	PD	This pin has a 100k pulldown.
18	Cable detect	This signal must be pulled to ground by the external debugger or application for cable insertion detection.
19	PD	This pin has a 100k pulldown.
4, 6, 8, 10, 12, 14, 16, 20	GND	

9.4 Trace Header

A header with connections to the Embedded Trace Module (ETM) in the EFM32 Giant Gecko MCU is provided on the reverse side of the PCB. The header is not mounted by default, but a 20-pin, 1.27mm pitch SMD header can be soldered on to allow an external trace emulator to be connected.

In addition to the serial wire debug pins, this header also contains the ETM_CLK and ETM_TD signals. The pinout is described in Table 9.3 (p. 19). Please refer to the kit assembly drawing to locate the trace header, which has the reference P200.

Figure 9.4. Trace Header

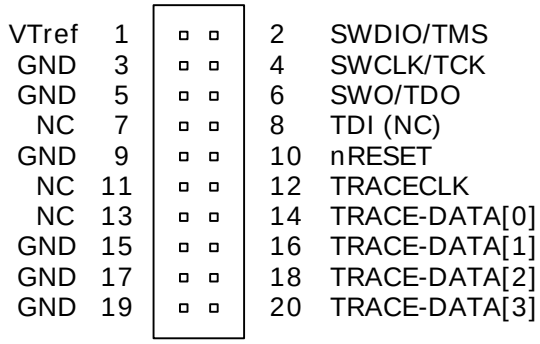


Table 9.3. Trace header pinout

Pin number	Function	Note
1	VTref	Target reference voltage.
2	SWDIO/TMS	Serial Wire Data Input/Output
4	SWCLK/TCK	Serial Wire Clock input
6	SWO/TDO	Serial Wire Output trace port
8	TDI	Not Connected on the EFM32GG-STK3700
10	nRESET	Target CPU reset signal.
12	TRACECLK	Trace clock output. Trace clock = 1/2 CPU clock.
14	TRACE-DATA[0]	Trace data output pin 0.
16	TRACE-DATA[1]	Trace data output pin 1.
18	TRACE-DATA[2]	Trace data output pin 2.
20	TRACE-DATA[3]	Trace data output pin 3.
7, 11, 13	NC	Not Connected
3, 5, 9, 15, 17, 19	GND	

Note

The EFM32GG-STK3700 debugger does not contain any trace functionality apart from the basic functionality provided with Serial Wire View (SWV). This header is only useful together with an external trace emulator.

10 Debugging

The EFM32GG-STK3700 contains an integrated debugger, which can be used to download code and debug the EFM32 Giant Gecko MCU. In addition to programming the microcontroller on the kit, the debugger can also be used to program and debug external Energy Micro devices.

10.1 Debug Modes

Programming external devices is done by connecting to a target board through the provided debug connector, and by setting the debug mode to *OUT*. The same connector can also be used to connect an external emulator to the EFM32 MCU on the kit, by setting the debug mode to *IN*. A summary of the different supported debug modes are described in Table 10.1 (p. 20) .

Table 10.1. Debug modes

Mode	Description
Debug MCU	In this mode the on-board debugger is connected to EFM32 on the EFM32GG-STK3700.
Debug IN	In this mode the on-board debugger is disconnected, and an external debugger can be connected to debug the EFM32 on the EFM32GG-STK3700.
Debug OUT	In this mode the on-board debugger can be used to debug an EFM32 mounted in your own application.

Selecting the active debug mode is done with a drop-down menu in the energyAware Commander tool, which is available through Simplicity Studio.

10.2 Debugging during battery operation

When the EFM32 is powered by the battery and the USB is still connected, the on-board debug functionality is available. If the USB power is disconnected the debug controller on the kit will not work. To enable debugging in this mode, connect an external debugger (e.g. another EFM32GG-STK3700) to the debug pads in the bottom right corner of the EFM32GG-STK3700. These pads are connected directly to the EFM32 debug interface. The pinout of this debug connector is printed on the PCB, and is also shown in the lower right corner of Figure 9.1 (p. 15)

11 Integrated Development Environments

The Energy Micro software packages contains various examples in source form to use with the Starter Kit. The following IDEs are supported.

11.1 IAR Embedded Workbench for ARM

An evaluation version of IAR Embedded Workbench for ARM is included on a CD in the EFM32GG-STK3700 package. Check the quick start guide for where to find updates, and IAR's own documentation on how to use it. You will find the IAR project file in the

```
iar
```

subfolder of each project

11.2 Rowley Associates - CrossWorks for ARM

See the quick start guide for download details for CrossWorks for ARM. You will find CrossWorks project files in the

```
rowley
```

subfolder of each project.

11.3 CodeSourcery - Sourcery G++

See the quick start guide for download details for Sourcery G++. The

```
codesourcery
```

subfolder contains Makefiles for use with the Sourcery G++ development environment.

11.4 Keil - MDK-ARM

See the quick start guide for download details for evaluation versions of Keil MDK-ARM. The

```
arm
```

subfolder in each project contains project files for MDK-ARM. Please see the MDK-ARM documentation for usage details.

12 energyAware Commander and Upgrades

The *energyAware Commander* is a program that comes with Simplicity Studio. It can perform various kit and EFM32 specific tasks.

12.1 eA Commander Operation

This utility gives the ability to program the EFM32, upgrade the kit, lock and unlock devices and more. Some of the features will only work with Energy Micro kits, while other will work with a J-Link debugger connected. Press the "F1" button, or select the "Help->Help" menu item for a full description.

12.2 Upgrades

Upgrading the kit is done through Simplicity Studio. The Studio will automatically check for new updates on startup.

You can also use the *energyAware Commander* for manual upgrades. Select the "Kit" icon, use the "Browse" button to select the correct file ending in ".emz", and press the "Install package button".

13 Schematics, Assy Drawings and BOM

The schematics, assembly drawings and bill of materials (BOM) for the EFM32 Giant Gecko Starter Kit board is available through Simplicity Studio when the kit documentation package has been installed.

14 Kit Revision History and Errata

14.1 Revision History

Table 14.1. Kit Revision History

Kit Revision	Released	Description
A02	26.04.2012	Initial production version
A03	15.05.2012	Updated PCB to add test-points for EFM32 USB.

14.2 Errata

Table 14.2. Kit Errata

Kit Revision	Problem	Description
A02	Footprint of C250 is wrong.	One of the capacitors on the OPAMP footprint, as described in Section 5.9 (p. 10) , is a 0402 sized footprint instead of 0603. This is a minor problem, and might cause some difficulties when trying to add a capacitor here. The error is only present on PCB's marked "PCB2200 REV. A02".

15 Document Revision History

15.1 Revision 0.10

2012-05-15

First revision with revision history.

A Disclaimer and Trademarks

A.1 Disclaimer

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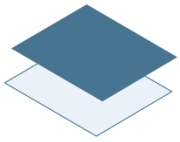

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